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मानक

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IS 384-2 (2012): Brushes, Paints and Varnishes, Flat, Part 2: Household Purposes [CHD 24: Brushware]



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“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक
रंग रोगन और वार्निश के लिए सपाट ब्रश — विशिष्टि
भाग 2 घरेलू उपयोग के लिए
(छठा पुनरीक्षण)

Indian Standard
BRUSHES, PAINTS AND VARNISHES,
FLAT — SPECIFICATION
PART 2 HOUSEHOLD PURPOSES
(*Sixth Revision*)

ICS 87.040; 87.100

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NEW DELHI 110002

FOREWORD

This Indian Standard (Part 2) (Sixth Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by Brushware Sectional Committee had been approved by the Chemical Division Council.

IS 384 was first published in 1954 and subsequently revised in 1961, 1964, 1971, 1979 and 2002.

IS 384 is intended to be used for general painting and varnishes of flat surfaces irrespective of type of painting work whether heavy or light. However the Committee decided to revise it by splitting into two parts. The other part in the series is:

Part 1 Heavy duty

This standard specifies the requirements of flat brushes to be used specifically in the area of household consumers, small sign painters, art designers as well as for application of lubricants on machine parts and for cleaning of machinery, etc, while Part 1 specifies the requirements of flat brushes to be used primarily in the industrial area for house building and structural paints and varnishing.

There is no ISO Standard on this subject. This standard is developed based on the indigenous technology available in India.

This standard contain clauses **4.1.1.2**, **6.1.2** and **6.2.1** which call for agreement between the indentor/purchaser and the supplier.

The composition of the Committee responsible for formulation of this standard is given in Annex G.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be same as that of the specified value in this standard.

Indian Standard

BRUSHES, PAINTS AND VARNISHES, FLAT — SPECIFICATION

PART 2 HOUSEHOLD PURPOSES

(*Sixth Revision*)

1 SCOPE

This standard prescribes requirements and methods of sampling and test for flat brushes for household painting and varnishing purposes made from bristles and set in a suitable cement.

2 REFERENCES

The following standards contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS No.</i>	<i>Title</i>
321 : 1964	Specification for absolute alcohol (<i>revised</i>)
380 : 1978	French chalk, technical (<i>second revision</i>)
534 : 1992	Benzene — Specification (<i>third revision</i>)
539 : 1974	Specification for naphthalene (<i>second revision</i>)
707 : 1976	Glossary of terms applicable to timber and timber technology and utilization (<i>second revision</i>)
1844 : 1993	Bristles (<i>second revision</i>)
3451 (Part 1) : 1978	Code of practice for care and maintenance of brushes: Part 1 Pan set brushes (<i>first revision</i>)
4905 : 1968	Methods for random sampling
5060 : 1969	Glossary of terms used in brushware industry

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 707, IS 5060 and the following shall apply.

3.1 Approved Tender Sample — The sample accepted by the indenter or inspection authority as basis for supply.

NOTE — When a sample is tested and approved by the purchaser or by an inspection authority, the results of such tests as will permit the supplier to meet the limits imposed by the standard for deliveries, shall be made available to the supplier.

4 REQUIREMENTS

4.1 Materials

The brushes shall be manufactured from the following materials.

4.1.1 Bristles

The bristles used shall only be obtained from hogs, pigs or boars and shall satisfy the description as specified under 4.1.1.1.

4.1.1.1 Description

Selected, properly straightened, natural colour, soft or semi-stiff bristles only shall be used (*see* IS 1844).

4.1.1.2 The solid dressing of bristles used shall be as per the approved sample, if so agreed to by the indenter; otherwise it shall comply with the provisions given in IS 1844.

4.1.2 Timber

4.1.2.1 Any of the timber species listed in Annex A as declared by the supplier shall be used for the manufacture of the handle.

4.1.2.2 The timber shall be reasonably straight-grained along length and well seasoned to a moisture content not exceeding 15 percent, when tested either by electronic moisture meter or by oven drying method as specified in Annex B. However, in case of dispute oven drying method shall be referred.

4.1.2.3 The timber shall be free from brashness, any kind of biological or non-biological deterioration, insect attack, centre-heart (pit), knots (except live pin knots), cracks warp and any other defect which may reduce the life of the brush or affect its utility.

4.1.3 Ferrule

Thickness of tin plate for making ferrule shall be minimum 0.25 mm for all sizes.

4.1.4 Wedge

A suitable non-metallic wedge shall be used along with the bristles inside the ferrule.

4.1.5 Pins

4.1.5.1 Connecting pins

The connecting pins shall be round head steel pins 1.00 to 1.40 mm in diameter.

4.1.5.2 Securing pins

The securing pins shall be flat or round head brass or steel pins 1.00 to 1.40 mm in diameter.

4.1.6 Setting of Bristles

Bristles shall be introduced from the bottom of the ferrule; the wedge shall be placed in the proper position and the entire mass shall be firmly set in the ferrule with any suitable cement.

4.2 Sizes

The flat brushes for paints and varnishes shall be of the sizes 19 mm, 25 mm, 38 mm, 50 mm, 63 mm, 75 mm and 100 mm.

NOTE — The size of the brush indicates the internal width of the ferrule (see Fig. 1).

4.3 Dimensions and Tolerances

4.3.1 Dimensions

The brushes shall conform to the dimensions given in Table 1.

4.3.2 Tolerances

4.3.2.1 The tolerance on the linear dimensions of handle and ferrule shall be as given in Table 2.

4.3.2.2 A tolerance of ± 1.0 mm may be allowed on the diameter of handle.

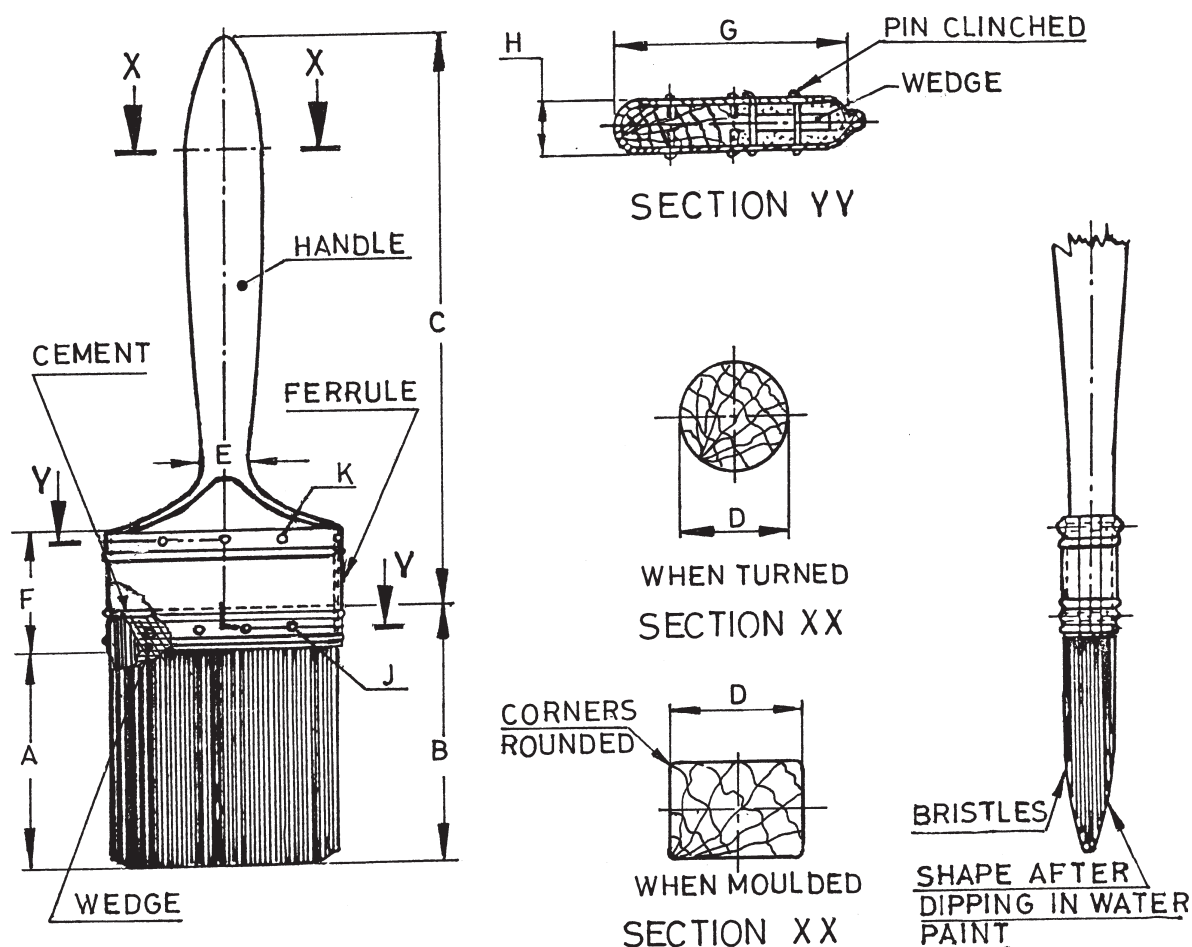


FIG. 1 SHAPE AND DESIGN OF BRUSHES, PAINTS AND VARNISHES, FLAT

Table 1 Requirements of Brushes, Paints and Varnishes, Flat for Household Purposes
(Clauses 4.3.1, 4.3.2.3 and 4.8)

All dimensions in millimetres.

Sl No.	Size	Bristle		Handle			Ferrule			No. of Connective Pins	No. of Securing Pins	Mass of Bristles per Finished Brush g
		Protrusion	Overall Length <i>Min</i>	Overall Length <i>Min</i>	Diameter		Length	Internal Width	Internal Thickness			
(1)	(2)	<i>A</i> (3)	<i>B</i> (4)	<i>C</i> (5)	<i>D</i> (6)	<i>E</i> (7)	<i>F</i> (8)	<i>G</i> (9)	<i>H</i> (10)	<i>J</i> (11)	<i>K</i> (12)	(13)
i)	19	30	51	106	16	9	32	19	9	1	3	3.0
ii)	25	38	51	130	16	10	32	25	12	2	3	5.0
iii)	38	38	51	130	16	10	32	38	12	2	4	10.0
iv)	50	44	57	145	18	12	32	50	12	2	4	15.0
v)	63	44	57	145	19	13	38	63	12	2	4	25.0
vi)	75	50	63	150	20	15	38	75	12	3	4	30.0
vii)	100	56	69	160	20	15	38	100	12	3	6	40.0

NOTE — For legends A to K, see Fig. 1.

4.3.2.3 The above tolerance shall not apply to bristles for which minimum lengths have been prescribed in Table 1.

Table 2 Tolerance on Dimensions
(Clause 4.3.2.1)

Sl No.	Nominal Size	Tolerance
(1)	mm (2)	mm (3)
i)	Up to 15	± 1.0
ii)	Over 15 but below 40	± 2.0
iii)	40 and above	± 3.0

4.4 Manufacture

4.4.1 The brushes shall generally conform to the shape and design as shown in Fig. 1.

4.4.2 The handle shall be shaped to suit the ferrule.

4.4.3 The ferrule shall be lapped and soldered or spot welded. Alternatively, it may be hook jointed.

4.4.3.1 The ferrule if lapped, shall be properly soldered. The lapping shall be not less than 3 mm.

4.4.3.2 The ferrule shall be grooved as shown in Fig. 1 and shall be coated with a suitable varnish.

4.4.4 The bristles with wedge shall be properly set and firmly cemented into the ferrule. There shall be no loose bristles and the cement shall not flow out of the ferrule.

4.4.4.1 Beveling of working edge

The working edge of the brush shall be bevelled as shown in Fig. 1.

4.4.5 The handle shall be inserted into the ferrule and secured by means of requisite number of securing pins

as shown in Fig. 1 and these shall be driven into the ferrule alternately from opposite sides.

4.4.6 The connecting pins shall be properly inserted and neatly clinched on the opposite side of the ferrule or rivetted.

4.5 Pull Test

The force required for pulling out an individual segment of bristles shall not be less than 5 kg for 1 min when tested according to the method given in Annex C

4.6 Benzene Alcohol Test

When a small bunch of bristles is subjected to a straight pull with thumb and finger grip, the same shall not come out. Immerse the bristles portion of the brush for 48 h in a mixture of benzene (see IS 534) and denatured spirit (see IS 321) (1:1 by volume) maintained at room temperature in such a way that at least half of the ferrule is above the level of the solvent mixture and the bristles do not touch the bottom of the container. On completion of this test, the brushes shall show no sign of loosening when used as a brush without paint on a plane surface.

4.7 Oven Test

4.7.1 For Non-rubber Set Brushes

The brush, without handle when suspended in an oven with the protruding bristle end upward and subjected to a temperature of $60 \pm 2^\circ\text{C}$ for 4 h, shall show no appreciable creeping of the cement. Further, after cooling the brush in air for 30 min, the anchorage of bristles shall not become loose inside the ferrule and the cement shall satisfy the pull test prescribed in 4.5.

4.7.2 For Rubber Set Brushes

The brush, without handle, when suspended in an oven with the protruding bristle end upward, and subjected to a temperature of $132 \pm 2^\circ\text{C}$ for 2 h, shall show no appreciable creeping of the cement. Further, after cooling the brush in air for 30 min, the anchorage of bristles shall not become loose inside the ferrule and the cement shall satisfy the pull test prescribed in 4.5.

4.8 Mass of Bristles per Finished Brush

The mass of bristles, as determined by the method prescribed in Annex D shall be as specified in col 13 of Table 1. A tolerance of ± 5 percent shall be allowed on the mass of the filling material provided the average mass of the filling material per brush in any lot, is not below the specified value (see F-2.2).

4.9 Processing of Bristles

The processing of the bristles when tested by the method given in Annex E shall be considered as satisfactory, if not less than 85 percent of the bristles by mass are of categories prescribed in E-3.2(a) and E-3.2(b) and out of these 60 percent shall belong to category E-3.2(a).

4.10 Detection of Dyed Bristles

4.10.1 The following two methods shall be utilized of detection of dyed bristles when tested as prescribed in Annex C of IS 1844:

- a) *Method A* — Microscopic examination; and
- b) *Method B* — Sandpaper test.

4.10.2 Method B shall be for routine testing, and Method A shall be referee method in case of any dispute.

4.11 Workmanship and Finish

4.11.1 The handle shall be finished smooth all over and shall be properly varnished or lacquered.

4.11.2 The ferrule shall be free from sharp edges.

4.11.3 In general workmanship and finish, the brushes shall match the approved sample (see 3.1).

4.12 Shelf-Life

The brushes shall have a minimum shelf-life, of one year, from the date of manufacture, when properly stored under shade and adequate precautions for preservation, as given in 3 of IS 3451 (Part 1) are taken.

5 PRESERVATION

The bristles of the brushes shall be liberally dusted, before packing with a mixture of 5 parts (by mass) of BHC dusting powder and 95 percent by mass of French chalk (see IS 380). Alternatively, naphthalene balls (see IS 539) shall be used in the packing box for the brushes.

6 PACKING AND MARKING

6.1 Packing

6.1.1 The bristle portion of the brush along with the ferrule shall be neatly covered with polythene or cellulose film and secured by a rubber band.

6.1.2 The brushes shall be packed as agreed to between the indenter or inspection authority and the supplier.

6.2 Marking

6.2.1 Unless otherwise agreed to between the indenter/purchaser and the supplier, each brush shall be legibly and indelibly marked or stamped with the following:

- a) Name of the manufacturer or his registered trade-mark;
- b) Month and year of the manufacture;
- c) Size of the brush; and
- d) Type of setting : Rubber set or non-rubber set.

6.2.2 The rubber set brushes shall, in addition to the marking specified under 6.2.1, be marked on ferrule or handle with the words 'Rubber Set'.

6.2.3 BIS Certification Marking

The brushes may also be marked with the Standard Mark.

6.2.3.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

7 SAMPLING AND CRITERIA FOR CONFORMITY

7.1 Sampling

The method of drawing representative samples of the brushes and the criteria for conformity shall be as prescribed in Annex F.

ANNEX A
(Clause 4.1.2.1)

SPECIES OF TIMBER FOR MANUFACTURE OF HANDLES

A-1 The list of species of timber approved for the manufacture of handles for brushes is given below:

Trade Name		Botanical Origin
Roman	Devanagari	
Aini	ऐनी	<i>Artocarpus hirsutus</i> Lam., fam. <i>Moraceae</i>
Banati	बनाती	<i>Lophopetalum wightianum</i> Arn., fam. <i>Celastraceae</i>
Bijasal	बीजसाल	<i>Pterocarpus marsupium</i> Roxb., fam. <i>Fabaceae</i>
Jam (Black Berry)	जैम	<i>E. cymosa</i> Roxb., Fl. Ind.
Champak	चम्पक	<i>Michelia champaca</i> Linn., fam. <i>Magnoliaceae</i>
Chickrassi	चिकरासी	<i>Chukrasia tabularis</i> A. Juss., fam. <i>Meliaceae</i>
Dhaman	धामन	<i>Grewia tiliifolia</i> Vahl., fam. <i>Tiliaceae</i>
Gamari (gumhar)	गमारी (गुम्हार)	<i>Gmelina arborea</i> Roxb., L., fam. <i>Verbenaceae</i>
Krishnachura (Gold Mohar)	कृष्णचूरा	<i>Poinciana pulcherrima</i> Roxb., fam. <i>Fabaceae</i>
Haldu	हल्दू	<i>Adina cordifolia</i> Hook f. fam. <i>Rubiaceae</i>
Kadam	कदम	<i>Nauclea cadamba</i> Roxb., fam. <i>Rubiaceae</i> <i>Sarcocephalus cadamba</i> Kurz.
Kaim	कैम	<i>Mitragyna parvifolia</i> (Roxb.) Korth. Syn. <i>Stephegyne parvifolia</i> Korth, fam. <i>Rubiaceae</i>
Kanju	कांजू	<i>Holoptelea integrifolia</i> (Roxb.) Planch fam. <i>Ulmaceae</i>
Karanja	करांजा	<i>Galedupa indica</i> Lam., fam. <i>Fabaceae</i>
Kathal	कटहल	<i>Artocarpus heterophyllus</i> Lam. Syn. <i>A integrifolia</i> Auct., fam. <i>Moraceae</i>
Kuthan	कूथन	<i>Hymenodictyon excelsum</i> Wall, fam. <i>Rubiaceae</i>
Lambapatti	लाम्बापत्ती	<i>Planchonella longipetiolata</i> H.J. Lam., Syn. <i>Sideroxylon longipetiolata</i> King and Prain, fam. <i>Sapotaceae</i>
Aam (Mango)	आम	<i>Mangifera indica</i> Linn., fam. <i>Anacardiaceae</i>
Mehagini	महगनी	<i>Swietenia</i> spp.
Nim-chameli	नीम-चमेली	<i>Millingtonia hortensis</i> Linn. F. fam. <i>Bignoniaceae</i>
Kodapalai (piney)	कोडपलाई (पिने)	<i>Kingiodendron pinnatum</i> Harms, Syn. <i>Hardwickia pinnata</i> Roxb., fam. <i>Leguminosae</i>
Saibabla	सैबाबला	<i>Mimosa arabica</i> Roxb. Fl. Ind.
Sirish	सिरिश	<i>Mimosa sirisa</i> Roxb. Fl. Ind.
Toon	तून	<i>Toona ciliata</i> Roem., Syn. <i>Cedrela toona</i> Roxb., fam. <i>Meliaceae</i>

ANNEX B (Clause 4.1.2.2)

DETERMINATION OF MOISTURE CONTENT OF TIMBER

B-1 TEST SPECIMEN

The entire block used in brush may form the test specimen for determination of moisture content or a coupon cut from the test specimen as well may be used. When for any reason additional determination of moisture content is required separate samples shall be prepared from the sample material. Smaller specimens may be used, when deemed necessary. The test shall be carried out immediately after cutting the specimen.

B-2 PROCEDURE

Weigh accurately each test specimen. Dry in a ventilated oven at a temperature of $105 \pm 2^\circ\text{C}$. The weight shall be recorded at regular intervals. The drying

shall be considered to be complete when the variation between last two weighings, does not exceed 0.002 g. The final weight shall be taken as oven dry weight.

B-3 CALCULATION

B-3.1 The moisture content, expressed as percent of the dry mass, is given by the following formula:

$$\text{Moisture content, percent of the dry mass} = \frac{M_1 - M_0}{M_0} \times 100$$

where

M_1 = initial mass of the test specimen, in g; and

M_0 = dry mass of the test specimen, in g.

ANNEX C (Clause 4.5)

DETERMINATION OF PULL STRENGTH

C-1 APPARATUS

C-1.1 A simple instrument as shown in Fig. 2 can be used for testing the pull strength. This unit is suitable for mounting on wall. It consists of dial force gauge/ weighing scale (0-0 kg) operating on spring (A) mounted on wooden plate (B). A tubular tuft holder (C) is hung on the hook of dial gauge. A clamp for holding the brush (E) is provided which is movable downward and upward with a screw (F). The dial force gauge/weighing scale shall be calibrated having traceability to NPL.

NOTE — Any other appropriate instrument for determination of the pull strength available may also be used.

C-2 PROCEDURE

C-2.1 Fix a brush with bristles in upward direction in

the brush holder with the help of screw (G). Divide the bristles into segments of about 10 mm length.

C-2.2 Insert all bristles of one segment in the hole provided at the bottom of tubular tuft holder (C). Care should be taken not to allow bristles from adjacent segment to enter into the hole. Fix the bristles firmly with the help of screw (D).

C-2.3 Adjust the pointer on dial to zero by adjustment of screw (F).

C-2.4 Move down the brush holder slowly with screw (F) watching the pointer on dial carefully till it reaches 5 kg mark and keep it there for 1 min. Then remove the brush from the gadget and examine. The bristles of any segment shall not come out of the cement during the test.

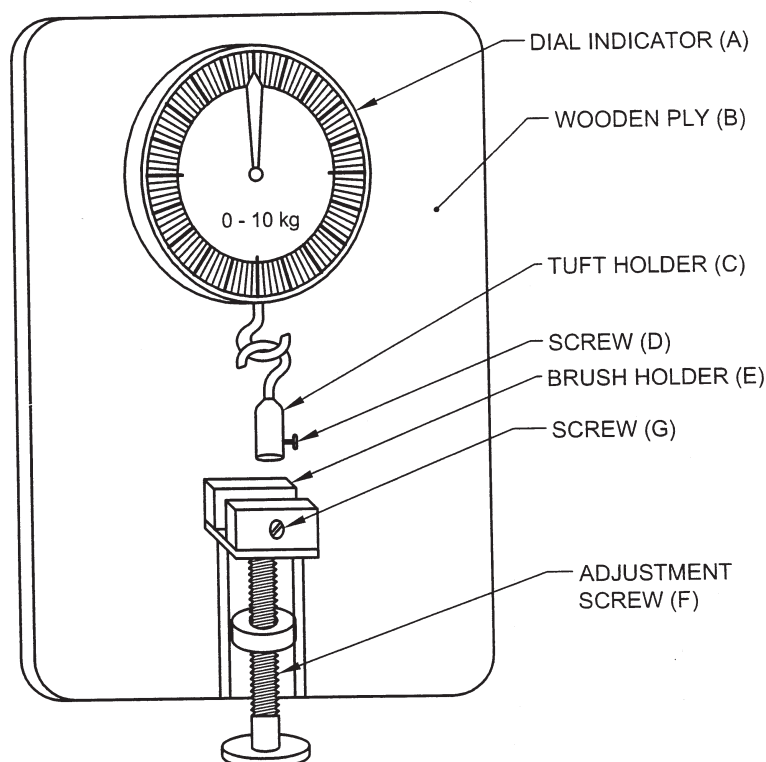


FIG. 2 INSTRUMENT FOR DETERMINATION OF PULL STRENGTH

ANNEX D

(Clause 4.8)

DETERMINATION OF MASS OF BRISTLES

D-1 GENERAL

For determining the mass of bristles in a brush, they are detached by gentle hammering as described under **D-2.1** or, if the bristles are set in vulcanized rubber, by soaking in a solvent and detaching the bristles from the cement as described under **D-2.2**.

D-2 PROCEDURE

D-2.1 For Cement Other than Vulcanized Rubber

Remove all connecting pins as well as those securing the handle. Cut the ferrule right through its length on any one of the sides by means of a chisel. Open the ferrule and remove the bristles. Hammer the root ends of the bristles gently with a raw hide mallet to reduce the cement to powder and shake the bristles. Repeat this process till all traces of cement are removed. Dry

the bristles in an oven at $100 \pm 2^\circ\text{C}$ for 30 min. Cool for 24 h in air and weigh under prevalent atmospheric conditions.

D-2.2 For Vulcanized Rubber Setting

Open the ferrule as described under **D-2.1** and remove the bristles, soak the setting in an appropriate solvent until it is sufficiently friable to be broken down. This would normally take 12 to 18 h. Remove the bristles from the solvent mixture and gently knead between the fingers so as to separate the bristles from the block into which they are mounted, but taking care that no undue force is used which may break the bristles. Repeat this process until the bristles are free from vulcanized rubber setting. Dry the bristles in an oven at $100 \pm 2^\circ\text{C}$ for 30 min. Cool for 24 h in air and weigh under prevalent atmospheric conditions.

ANNEX E

(Clause 4.9)

TEST FOR PROCESSING OF BRISTLES

E-1 GENERAL

The objective of this test is to determine whether the processing of the bristles, for elimination of their natural tendency to curve, has been adequate or not.

E-2 TEST SAMPLE

A bunch of bristles, freed from cement as prescribed under Annex D and consisting of at least 10 percent of the total mass of the filling material of the brush, shall constitute the test sample.

E-3 PROCEDURE

E-3.1 Tie the test sample of the sealing material with

thread of linen, tape at one end and suspend it in water maintained at $70 \pm 2^\circ\text{C}$ for 10 min. Remove the bristles from the water and shake to remove as much water as possible. Untie the knot and spread out all the bristles on a large sheet of blotting paper in a warm place. Allow to dry at room temperature for 48 h.

E-3.2 The bristles shall then be examined and categorized as given below:

- a) Bristles which are straight;
- b) Bristles which have curvature whose radius is 230 mm or more (see Fig. 3); and
- c) Remainder.

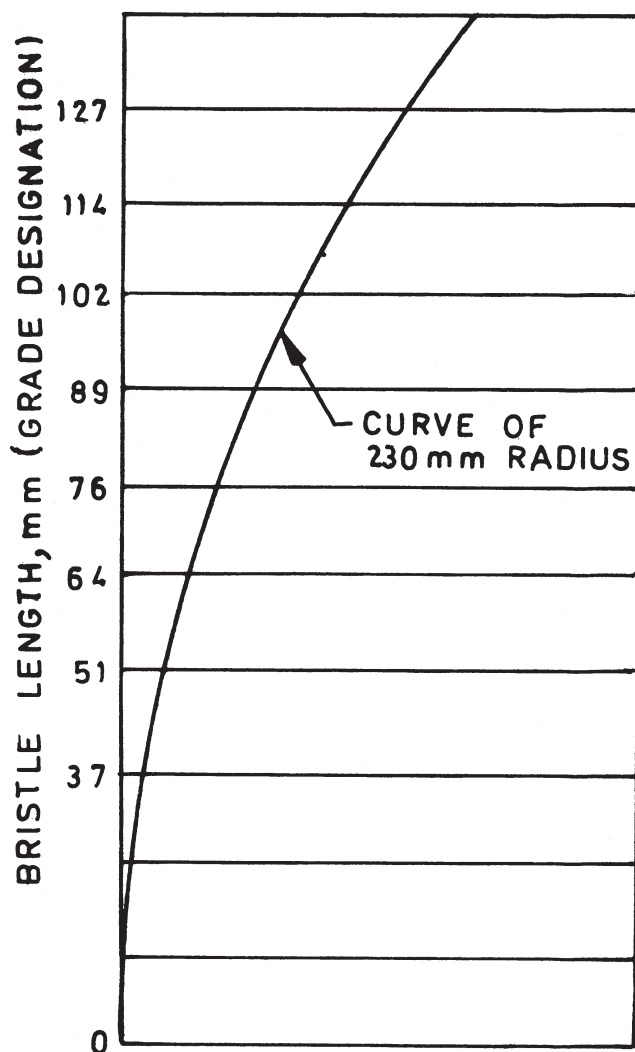


FIG. 3 CURVING OF BRISTLES

ANNEX F

(Clause 7.1)

SAMPLING AND CRITERIA FOR CONFORMITY

F-1 SCALE OF SAMPLING

F-1.1 Lot

In any consignment, all the brushes of same size, same type, similar dimensions and manufactured from the same type of material, shall be divided into groups of 1 000 and each such group shall constitute a lot. Care shall be taken to ensure that brushes included in a lot do not differ in construction, as far as possible.

F-1.2 For ascertaining the conformity of the brushes to the requirements of this standard, samples shall be tested from each lot separately.

F-1.3 The number of brushes to be selected from a lot shall depend on the size of the lot and shall be in accordance with col 2 and col 3 of Table 3.

F-1.3.1 These brushes shall be selected at random from the top, middle and bottom of the box, if the brushes are packed in only one box. If the brushes in a lot are packed in more than one box, at least 20 percent of the boxes, subject to a minimum of two shall be selected and approximately equal number of brushes shall be taken from each box, so as to constitute the required sample size given in col 3 of Table 3. In order to ensure the randomness of selection, procedures given in IS 4905 may be followed.

F-2 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

F-2.1 All the brushes selected according to **F-1.3** shall be examined for constructional requirements given in **4.1** to **4.4**, **4.11** and Fig. 1. A brush failing in one or more of these requirements shall be considered as defective.

F-2.1.1 The lot shall be declared as conforming to these requirements, if the number of defective found in the sample is less than or equal to the permissible number of defective given in col 4 of Table 3.

F-2.2 The lot having been found satisfactory according to **F-2.1.1** shall further be subjected to tests given under **4.5** to **4.10**. For this purpose, three brushes shall be selected from a lot containing 500 or less brushes and six brushes from a lot containing more than 500 brushes. These brushes may, however, be taken from those already examined and found satisfactory according to **F-2.1**.

F-2.2.1 Pull test, benzene alcohol test and oven test shall be performed first, on each of the brushes selected according to **F-2.2** and then these brushes shall be subjected to mass of bristles per finished brush, processing of bristles and detection of dyed brushes in this order, according to methods given in **4.8**, **4.9** and **4.10** respectively.

F-2.2.2 The lot shall be deemed to have met the requirements for these tests, if no failure occurs under **F-2.2**; otherwise not.

F-3 CRITERIA FOR CONFORMITY

The lot shall be declared as conforming to the requirements of this standard, if **F-2.1** and **F-2.2** are satisfied.

NOTE — For description of bristles (*see 4.1.1.1*) and workmanship and finish (*see 4.11*), the brushes selected according to **F-1.3.1** shall be matched with the approved tender sample which is suitably stamped and sealed by the purchaser or the inspection authority and kept at a place agreed to between the two.

Table 3 Scale of Sampling and Permissible Number of Defective Brushes
(Clauses F-1.3, F-1.3.1 and F-2.1.1)

Sl No.	No. of Brushes in the Lot	No. of Brushes to be Selected	Permissible No. of Defective Brushes
(1)	(2)	(3)	(4)
i)	Up to 25	3	0
ii)	26-100	5	0
iii)	101-300	7	0
iv)	301-500	9	0
v)	501-1 000	13	1

ANNEX G

(Foreword)

COMMITTEE COMPOSITION

Brushware Sectional Committee, CHD 24

<i>Organization</i>	<i>Representative(s)</i>
Office of the Development Commissioner, New Delhi	DR P. K. CHAUDHURI (Chairman) SHRI R. K. PYNE (<i>Alternate</i>)
A. K. Ghosal & Sons, Kolkata	SHRI R. K. GHOSAL SHRI V. GHOSAL (<i>Alternate</i>)
AB Composites (P) Ltd, Kolkata	SHRI ANUKUL SAMANTA SHRI BASUDEV SAMANTA (<i>Alternate</i>)
BHEL, New Delhi	REPRESENTATIVE
Brushwell & Co, Kolkata	SHRI JAYCHANDRA MEHTA SHRI KETAN SHAH (<i>Alternate</i>)
Central Brush Works, Kolkata	SHRI A. K. SIKDAR SHRI A. SIKDAR (<i>Alternate</i>)
Colgate-Palmolive (India) Ltd, Mumbai	SHRI A. G. GAITONDE SHRI RISHI SRIVASTAVA (<i>Alternate</i>)
Directorate General of Supplies & Disposals (QA), New Delhi	SHRI P. K. MAHANA SHRI R. GHOSH (<i>Alternate</i>)
Directorate of Marketing & Inspection, Faridabad	DR G. GOPALA RAO
Eastern Railway Carriage & Wagon Workshop, Howrah	SHRI B. R. GANGULY SHRI B. D. DAS (<i>Alternate</i>)
Federation of Consumer Associations of West Bengal, Kolkata	SHRI BIPLAB SARKAR SHRI KAMAL SENGUPTA (<i>Alternate</i>)
Forest Research Institute, Dehradun	SHRI RAJESH BHANDARI
Hindustan Lever Ltd, Mumbai	SHRI N. S. BIJLANI SHRI VIJENDRA BOONLIA (<i>Alternate</i>)
Indian Airlines, New Delhi	REPRESENTATIVE
Indian Soaps & Toiletries Manufacturers' Association, Mumbai	SHRI MADAN THAKUR
Ministry of Defence (DGQA) Comptrollerate of Quality Assurance (GS), Kanpur	SHRI NUSRAT ULLAH SHRI A. K. GANGULY (<i>Alternate</i>)
Ministry of Defence (R & D), Kanpur	SHRI RAVINDRA KUMAR SHRI V. K. SINGH (<i>Alternate</i>)
Ministry of Railways, Research, Design & Standards Organization, Lucknow	SHRI P. MURALIDHARAN
National Test House, Kolkata	DR I. N. MUKHERJEE DR P. KANJILAL (<i>Alternate</i>)
Ordinance Factory, Moradnagar	REPRESENTATIVE
Ordinance Factory Board, Kolkata	SHRI RAKESH SURYA SHRI VIJAY SINGH (<i>Alternate</i>)
RITES Limited, New Delhi	SHRI J. S. AZAD SHRI V. K. JAIN (<i>Alternate</i>)
Usha Industries, New Delhi	SHRI DHARAMBIR
Wild Life Crime Control Bureau, New Delhi	SHRI A. K. SOLO
BIS Directorate General	SHRI E. DEVENDAR, Scientist 'F' & Head (Chem) [Representing Director General (<i>Ex-officio</i>)]

Member Secretary

SHRI N. K. PAL
Scientist 'E' (Chem), BIS

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